

REMARKS

The examiner has rejected claims 37-45 on the ground of obviousness relying on Garland and Velkoff as the principal combination of references.

Claim 37 has been amended to incorporate subject matter from claim 41 and to reorder various wording for clarity. A new claim 46 is based on previous claims 20, 22 and 23.

Claim 37 has been amended to incorporate the subject matter of claim 41. In addition, claim 37 now requires that the driving arrangement of the second carriage structure and the shaft should "provide drive of the shaft, independently of the motor". Basis for this amendment is at page 8, lines 31 to 33, for example ("this allows for manual operation.....").

The examiner's comments in relation to claims 39 and 41 have been carefully noted. Amended claim 37 is novel over Garland in at least five respects, namely:

1. "Carried by the shaft" In Garland, the axis of shaft 7 (which is driven) moves ("the shaft 7 is moved horizontally" – see column 1, line 65. Consequently, the shaft 7 of Garland is mounted on the frame 1. Note also the choice of language of "frame", further indicating that the shaft 7 is mounted on the frame, and that there is no "module which is carried, in use by the shaft".
2. "A second carriage structure movable..... into and out of driving engagement with the shaft to provide drive of the shaft independently of the motor". In Garland, the frame 18 carries pulleys 16, 17 which transmit (reverse) drive from the driving pulley 12 to the pulleys 13. Thus the drive to the pulley 13 is always taken from the pulley 12, either in the forward direction through the belt 14, or the reverse direction through the pulleys 16, 17. There is no mechanism for driving the pulley 13 independently of the pulley 12.
3. "The control means is a Bowden cable". The examiner acknowledges that Garland does not disclose a Bowden cable.

4. "The Bowden cable is operable, in use,..... engaging the clutch means" and also, "the Bowden cable is operable, in use, to cause the second carriage structure to move into and out of driving engagement". Garland does not describe a Bowden cable operating two independent mechanisms.
5. "The second carriage structure to move into and out of driving engagement as soon as the clutch means is disengaged and engaged, respectively". Garland has no disclosure of a Bowden cable operating two independent mechanisms, nor coordinating them for one to be operated "as soon as" the other is operated.

Comments of the examiner in relation to claim 41 seek to suggest these novel features of the claim, relevant to Garland, are taught by Bent, also with reference to Hart. However, the teaching of Bent cannot be incorporated into Garland. The combined mechanism would not function. Consequently Garland and Bent cannot be combined as references. This can be explained further as follows.

Garland is operated by a lever 31 ("a manually actuated lever 31" – column 2, line 37). Lever 31 is mounted on the frame 1 by means of a pivot indicated in FIG. 1 (the upper pivot) and is coupled to a link 32 by another pivot. (Neither pivot has a reference numeral in FIG. 1, but both can clearly be seen in the region generally between the reference numerals 14 and 31). Thus, lever 31 has two fixings, one to the frame 1 and the other to the link 32. A Bowden cable also requires two connections, one to the sheath and one to the inner cable. Comparison of FIG. 3 of Bent with FIG. 1 of Garland shows that in the absence of any other teaching (such teaching is indeed entirely absent from either Garland or Bent), an attempt to introduce the linkage 101 from Bent into Garland would result in the sheath secured to the frame 1 at the position of the upper pivot of the lever 31, and the inner cable of the linkage 101 attached to the link 32, at the position of the lower pivot of the lever 31. In this condition, operation of the Bowden cable would result in the left hand end of the link 32 (as seen in FIG. 1 of Garland) being pushed down or pulled up. This is because a Bowden cable operates in a generally longitudinal direction. This would simply change the angle of the link 32, but would move the link 32 in a direction perpendicular to the direction necessary for proper

functioning of Garland. That is, a Bowden cable secured in place of the lever 31 would exert no force along the length of the link 32 and the Garland mechanism would be rendered inoperative.

Hart provides no additional teaching as to the appropriate manner of incorporating a Bowden cable into an arrangement of Garland.

Accordingly, claim 37 is novel over Garland and the combination of Garland and Bent cannot be made. Moreover, the subject matter of claim 37 conveys advantages not provided or foreseen by either Garland or Bent.

In particular, the arrangement of claim 37 provides operation of the clutch means without additional lateral force being applied to the shaft on which the module is carried. This arises because a Bowden cable is operated (at a remote location) by two equal and opposite forces which have the effect of moving the inner cable within the sheath, but not otherwise conveying a net force along the cable. Similarly, within the drive arrangement, relative movement of sheath and inner cable allow a force to be created within the drive arrangement, but with no net force in a lateral direction of the shaft. This is described in the application on page 10, from line 25. It provides the significant advantage of avoiding sideways loading on bearings, etc. However, Garland and Bent are both vulnerable in this respect. Garland is operated by the lever 31 and accordingly by applying a generally horizontal and unbalanced force in the direction labelled FORWARD or REVERSE in FIG. 1 of Garland. This net horizontal force must be borne somewhere in the mechanism, resulting in lateral forces on bearings, etc. Similarly, the mechanism of Bent is used to pull the idler pulley 87 away from the sheaths 35 and 51 when a driving coupling between the sheave is required. Thus, at all times that drive is being conveyed, there is a lateral force pulling from the sheaves 35, 51 toward the idler pulley 87. The Bent mechanism cannot operate without this lateral force. Wear on the bearings of the driven and driving shaft of Bent will thus be expected.

Consequently, while it is clear from the above arguments that the actuator 101 of Bent cannot be incorporated within Garland, it is furthermore clear that neither Garland nor even Bent has realized that adopting a Bowden cable in the manner now proposed by the present inventor can allow the bearings to be protected from lateral forces, by creating the mechanism now set forth in claim 37.

New claim 46 is based on previous claim 20. Previous claim 20 was rejected on the basis that Funk teaches the structure in claim 20 and therefore inherently teaches the property limitation set forth in claim 20. Current claim 46 is amended from previous claim 20 to make reference to the Bowden cable. Claim 46 is novel over Garland in relation to at least features 1 and 3 as set forth above. These novel features are not set forth in Funk, which uses a mechanical lever system for control, not a Bowden cable. Consequently, Funk ceases to be relevant in that it does not teach the structure now set forth in claim 46. One of the novel features of claim 46, the use of a Bowden cable, results in the significant advantages set forth above in relation to the absence of lateral forces, etc, as set forth in detail in applicant's reply to the Office action mailed December 24, 2009. Accordingly, claim 46 is novel and not taught or suggested by Garland or Funk or any combination thereof.

In view of the foregoing, applicant submits that the subject matter of claims 37 and 46 is not disclosed or suggested by the cited references, whether taken singly or in combination. Therefore, claims 37 and 46 are patentable and it follows that the dependent claims also are patentable.

Respectfully submitted,

/John Smith-Hill/

John Smith-Hill
Reg. No. 27,730

Chernoff, Vilhauer, McClung & Stenzel, LLP
601 SW Second Ave. Ste. 1600
Portland, OR 97204
Tel. (503) 278-3334
Fax (503) 228-4373
Docket: SWIN.3530